

**Figure 2: The BSRIA commissioning process.**

<div style="background-color: #c00000; color: white; padding: 10px; text-align: center; width: 100px; margin: 0 auto;"> <b>Stage 1</b> Preparation                 </div>	<div style="background-color: #0070c0; color: white; padding: 10px; text-align: center; width: 100px; margin: 0 auto;"> <b>Stage 2</b> Design                 </div>	<div style="background-color: #008000; color: white; padding: 10px; text-align: center; width: 100px; margin: 0 auto;"> <b>Stage 3</b> Pre-construction                 </div>	<div style="background-color: #e69d00; color: white; padding: 10px; text-align: center; width: 100px; margin: 0 auto;"> <b>Stage 4</b> Construction                 </div>
<ul style="list-style-type: none"> <li>Form the commissioning team</li> <li>Review lessons learned about the performance of buildings and the commissioning process on similar projects</li> <li>Clearly identify the performance outcomes needed by the client and ultimate end-users</li> <li>Help produce a client brief document that clearly describes the performance outcomes expected for the project</li> <li>Help produce a design brief that correctly represents the client's performance requirements</li> <li>Produce an initial commissioning plan in response to the clients brief and design brief</li> <li>Ensure that a budget will be assigned to undertake commissioning process activities</li> <li>Undertake commissioning team administration.</li> </ul>	<ul style="list-style-type: none"> <li>Appoint a commissioning management specialist</li> <li>Review the design brief with the client to ensure that it properly expresses the performance outcomes required from the building and its engineering services</li> <li>Employ learning from previous projects to help ensure that the required performance outcomes will be produced for the client</li> <li>Perform commissioning-focused design reviews</li> <li>Commence preparation of the commissioning specification</li> <li>Ensure commissioning process activities have been clearly and logically integrated into the overall programme of work for the project</li> <li>Make sure that the project cost plan is configured to include all the commissioning process activities described in the commissioning plan</li> <li>Update the client brief and the design brief as approved changes, additions or deletions are made to the design and then check against the client requirements</li> <li>Update the commissioning plan to reflect briefing and design changes and to include information for subsequent project stages</li> <li>Undertake commissioning team administration.</li> </ul>	<ul style="list-style-type: none"> <li>Perform a commissioning-focused review of the design</li> <li>Update the client brief and the design brief as approved changes, additions or deletions are made to the design; revisit the client requirements</li> <li>Finish the commissioning specification</li> <li>Update the commissioning plan</li> <li>Make sure that the requirements of the commissioning process are clearly defined in the tender documentation that is issued to the specialist trade contractors</li> <li>Ensure that the commissioning process is clearly explained to specialist trade contractors during the tender and appointment process</li> <li>Verify the capability of specialist trade contractors to meet the requirements of the commissioning process</li> <li>Make sure that the requirements of the commissioning process are clearly defined in the contract documentation of specialist trade contractors</li> <li>Undertake commissioning team administration.</li> </ul>	<ul style="list-style-type: none"> <li>Conduct pre-start commissioning workshops</li> <li>Produce a detailed commissioning programme</li> <li>Produce first draft O&amp;M manuals, commissioning method statements, checklists and tests sheets, and the off-site commissioning strategy before the start of installation works</li> <li>Perform a commissioned-focused review of construction drawings and technical submittals</li> <li>Conduct mock-up performance tests</li> <li>Co-ordinate third party involvement in the commissioning process</li> <li>Conduct pre-commissioning works, involving verification of installation works and static tests. Verify and document that the required performance outcomes have been achieved</li> <li>Collate the pre-commissioning checklists and test sheets in the format agreed by the commissioning team</li> <li>Monitor construction progress and its relationship with commissioning process activities</li> <li>Produce training courses and a training programme for users and operators</li> <li>Ensure continual progress is made with the production of the O&amp;M manuals and the building logbook</li> <li>Undertake commissioning team administration.</li> </ul>
<div style="background-color: #d9e1f2; padding: 5px; margin-bottom: 5px; text-align: center;">ACE work stage Appraisal and strategic briefing</div> <div style="background-color: #d9e1f2; padding: 5px; margin-bottom: 5px; text-align: center;">RIBA Plan of Work stage Preparation (A and B)</div> <div style="background-color: #d9e1f2; padding: 5px; text-align: center;">OGC Gateways 1 Business justification 2 Procurement strategy</div>	<div style="background-color: #d9e1f2; padding: 5px; margin-bottom: 5px; text-align: center;">ACE work stage Outline, detailed and final proposals</div> <div style="background-color: #d9e1f2; padding: 5px; margin-bottom: 5px; text-align: center;">RIBA Plan of Work stage Design (C, D and E)</div> <div style="background-color: #d9e1f2; padding: 5px; text-align: center;">OGC Gateways 3a Design brief and concept approval 3b Detail design approval</div>	<div style="background-color: #d9e1f2; padding: 5px; margin-bottom: 5px; text-align: center;">ACE work stage Production information</div> <div style="background-color: #d9e1f2; padding: 5px; margin-bottom: 5px; text-align: center;">RIBA Plan of Work stage Pre-construction (F, G and H)</div> <div style="background-color: #d9e1f2; padding: 5px; text-align: center;">OGC Gateway 4 Investment decision</div>	<div style="background-color: #d9e1f2; padding: 5px; margin-bottom: 5px; text-align: center;">ACE work stage Mobilisation, construction and completion</div> <div style="background-color: #d9e1f2; padding: 5px; margin-bottom: 5px; text-align: center;">RIBA Plan of Work stage Construction (J and K)</div> <div style="background-color: #d9e1f2; padding: 5px; text-align: center;">OGC Gateway 4 Investment decision</div>



<div style="text-align: center; background-color: #4b4b9b; color: white; padding: 5px;"> <b>Stage 5</b>            Commissioning            of engineering            services         </div>	<div style="text-align: center; background-color: #d94b8b; color: white; padding: 5px;"> <b>Stage 6</b>            Pre-handover         </div>	<div style="text-align: center; background-color: #1a5a96; color: white; padding: 5px;"> <b>Stage 7</b>            Initial            occupation         </div>	<div style="text-align: center; background-color: #d9c94b; color: white; padding: 5px;"> <b>Stage 8</b>            Post-occupancy            aftercare         </div>
<ul style="list-style-type: none"> <li>• Perform the setting to work of systems. Verify and document that the required performance outcomes have been achieved</li> <li>• Carry out regulation of systems. Verify and document that the required performance outcomes have been achieved</li> <li>• Undertake performance testing of the building and its engineering services. Verify and document that the required performance outcomes have been achieved</li> <li>• Involve facilities management personnel in the commissioning works</li> <li>• Co-ordinate third party involvement in the commissioning works</li> <li>• Collate the commissioning checklists and test sheets in the format agreed by the commissioning team</li> <li>• Finish the production of the O&amp;M manuals and the building logbook and integrate the required commissioning information</li> <li>• Monitor progress of commissioning process activities and construction works</li> <li>• Undertake commissioning team administration.</li> </ul>	<ul style="list-style-type: none"> <li>• Verify the quality of the documentary evidence from commissioning process works</li> <li>• Ensure that all required statutory documentation has been produced</li> <li>• Conduct training of users and operators</li> <li>• Produce and circulate a building users guide</li> <li>• Check and update the client brief and the design brief to reflect approved changes</li> <li>• Update the commissioning plan. Changes made and knowledge gained during site-based works should be reflected in post-handover works</li> <li>• Undertake commissioning team administration</li> <li>• Check the client's requirements and react to any differences.</li> </ul>	<ul style="list-style-type: none"> <li>• Introduce users to their building and show how it operates</li> <li>• Help the facilities management team with initial building operation</li> <li>• Observe occupant use of the building and fine-tune systems where necessary</li> <li>• Update commissioning records in accordance with any approved changes</li> <li>• Update the O&amp;M manuals and the building logbook in accordance with any approved changes</li> <li>• Produce a lessons-learned report about the commissioning process</li> <li>• Undertake commissioning team administration.</li> </ul>	<ul style="list-style-type: none"> <li>• Carry out seasonal commissioning</li> <li>• Fine tune the building and its engineering services</li> <li>• Collect and review evidence about building performance</li> <li>• Update the commissioning records, O&amp;M manuals and the building logbook in accordance with any seasonal commissioning and fine tuning works</li> <li>• Produce a lessons-learned report comparing building performance with design intent, client stakeholder expectations and benchmarks</li> <li>• Undertake commissioning team administration.</li> </ul>
<div style="background-color: #d9e1f2; padding: 5px; margin-bottom: 5px;">ACE work stage Mobilisation, construction and completion</div> <div style="background-color: #d9e1f2; padding: 5px; margin-bottom: 5px;">RIBA Plan of Work stage Construction (J and K)</div> <div style="background-color: #d9e1f2; padding: 5px; height: 30px;"></div>	<div style="background-color: #d9e1f2; padding: 5px; margin-bottom: 5px;">ACE work stage Mobilisation, construction and completion</div> <div style="background-color: #d9e1f2; padding: 5px; margin-bottom: 5px;">RIBA Plan of Work stage Construction (J and K)</div> <div style="background-color: #d9e1f2; padding: 5px; height: 30px;"></div>	<div style="background-color: #d9e1f2; padding: 5px; margin-bottom: 5px; height: 30px;"></div> <div style="background-color: #d9e1f2; padding: 5px; margin-bottom: 5px;">RIBA Plan of Work stage Use (L1, L2 and L3)</div> <div style="background-color: #d9e1f2; padding: 5px;">OGC Gateway 5 Readiness for service</div>	<div style="background-color: #d9e1f2; padding: 5px; margin-bottom: 5px; height: 30px;"></div> <div style="background-color: #d9e1f2; padding: 5px; margin-bottom: 5px;">RIBA Plan of Work stage Use (L1, L2 and L3)</div> <div style="background-color: #d9e1f2; padding: 5px;">OGC Gateway 6 Benefits evaluation</div>